Electronic Version

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Claims

[c1] A method of operating a safety system of an automotive vehicle comprising:

determining a lateral acceleration of the vehicle;

determining a lateral characteristic other than lateral acceleration;

comparing the lateral acceleration and lateral characteristic to a threshold that is a function of the lateral acceleration and the lateral characteristic;

indicating a roll condition in response to comparing; and

controlling a safety system in response to the roll condition.

[c2] A method as recited in claim 1 wherein the safety system comprises a roll stability control system.

[c3] A method as recited in claim 1 wherein the safety system comprises an airbag.

[c4] A method as recited in claim 1 further comprising determining a roll angle; wherein indicating a roll condition comprises indicating a roll condition in response to comparing and the roll angle.

[c5] A method as recited in claim 1 further comprising determining a longitudinal speed; wherein indicating a roll condition comprises indicating a roll condition in response to comparing and the longitudinal speed.

[c6] A method as recited in claim 1 further comprising determining a side slip angle; wherein indicating a roll condition comprises indicating a roll condition in response to comparing and the side slip angle.

[c7] A method as recited in claim 1 wherein the lateral characteristic comprises lateral energy.

[c8] A method as recited in claim 1 wherein the lateral characteristic comprises lateral energy density.

[c9] A method as recited in claim 1 wherein the lateral characteristic comprises lateral velocity.

[c10] A method as recited in claim 1 further comprising determining a vertical acceleration, confirming the roll condition in response to the vertical acceleration.

[c11] A method of controlling a safety device of an automotive vehicle comprising:
determining a roll angle rate of the vehicle;
determining a lateral acceleration;
determining a lateral characteristic other than lateral ac-

celeration;

generating a first indication of a roll condition in response to roll angle or rate;

generating a second indication of a roll condition in response to lateral acceleration and the lateral characteristic other than lateral acceleration; and

controlling the safety device in response to the first indication and the second indication.

[c12] A method as recited in claim 12 further comprising determining a vertical acceleration of the vehicle; safing the first indication in response to vertical acceleration.

[c13] A method as recited in claim 12 further comprising determining a vertical acceleration of the vehicle; safing the second indication in response to vertical acceleration.

[c14] A method as recited in claim 12 further comprising determining a side slip angle; wherein controlling the safety device comprises controlling the safety device in response to the side slip angle.

[c15] A method as recited in claim 14 wherein determining a side slip angle comprises determining a longitudinal speed and a lateral speed.

[c16] A control system for an automotive vehicle comprising:

a lateral acceleration sensor generating a lateral acceler-

ation signal;

a longitudinal speed sensor generating a longitudinal speed signal;

a lateral speed sensor generating a lateral speed signal;

a roll angle sensor generating a roll angle signal; and

a controller coupled to the lateral acceleration sensor, the longitudinal speed sensor, the lateral acceleration sensor, and the roll angle sensor, said controller generating a side slip angle in response to the lateral speed and the longitudinal speed, said controller indicating a roll condition by comparing the lateral acceleration signal and the lateral characteristic to a threshold and in response to side slip angle and roll angle.

[c17] A control system as recited in claim 16 wherein said roll angle sensor comprises a roll rate sensor from which roll angle is derived.

[c18] A control system as recited in claim 16 wherein the safety system comprises a roll stability control system.

[c19] A control system as recited in claim 16 wherein the safety system comprises an airbag.

[c20] A control system as recited in claim 16 further comprising a vertical acceleration sensor generating a vertical acceleration signal coupled to the controller, said con-

troller confirming the roll condition in response to the vertical acceleration sensor.